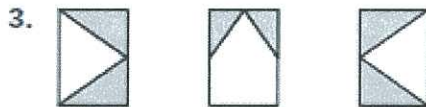


Name: _____ TP: _____

Failure to show work on all problems or use complete sentences will result in a LaSalle.

Sketch the next figure in the pattern.



For numbers 5- 8 write the next two numbers in the sequence.

5. 113, 224, 335, 446, ...

6. 4, 6, 9, 13, 18, ...

(What is the difference between each of the numbers?)

$4 + \underline{\hspace{1cm}} = 6$; $6 + \underline{\hspace{1cm}} = 9$; $9 + \underline{\hspace{1cm}} = 13$;

7. $\frac{1}{3}, \frac{3}{4}, \frac{5}{5}, \frac{7}{6}, \dots$

8. $\frac{7}{8}, \frac{6}{7}, \frac{5}{6}, \frac{4}{5}, \dots$

(#7-8: patterns in the numerator and patterns in the denominator)

9. 3, 0, -3, -6, ...

10. 1, 4, 9, 16, ...

$3 - \underline{\hspace{1cm}} = 0$; $0 - \underline{\hspace{1cm}} = -3$; $-3 - \underline{\hspace{1cm}} = -6$

$1^2 = 1 \dots$

Some of the following conjectures are true and some can be proven false using a counterexample. If the statement is **true**, write the word **TRUE** in the box. For statements that are **false**, provide a counterexample.

11) Conjecture: Everything that's hot is fried chicken.

Example:

FALSE. Coffee is also hot.

12) Conjecture: English is the only language spoken in the United States.

13) Conjecture: The square of an odd integer is odd.

Odd numbers end in 1, 3, 5, 7, or 9

$$1^2 \quad 3^2 \quad 5^2 \quad 7^2 \quad 9^2$$

14) Conjecture: If n is a real number then $-n$ is a negative number.

ALL numbers, except for imaginary numbers and infinity, are REAL numbers – that includes negative numbers and fractions!

15) Conjecture: The monthly high temperature in Abilene is never below 90°F two months in a row.

The Monthly High Temperatures for Abilene, Texas											
Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
88	89	95	97	99	101	103	107	101	97	91	89

16) Conjecture: The graph of a quadratic function $y = ax^2 + bx + c$ ($a \neq 0$) is always a parabola.

17) Conjecture: A quadratic equation always has two solutions. *(how many solutions does $y = x^2$ have?)*

18) Conjecture: Every quadratic function is factorable.

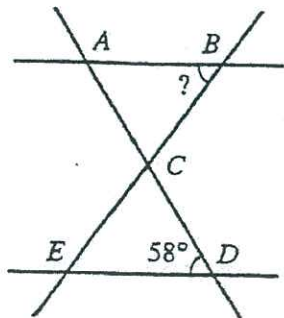
$$ax^2 + bx + c$$

19) Conjecture: The vertex of a parabola will always lie on the y-axis.

20)

ANSWER:

In the figure below, \overleftrightarrow{AB} is parallel to \overleftrightarrow{ED} , \overleftrightarrow{AD} and \overleftrightarrow{BE} intersect at C , and \overline{AC} is congruent to \overline{BC} . What is the measure of $\angle ABC$?



- F. 32°
- G. 45°
- H. 58°
- J. 61°
- K. 64°

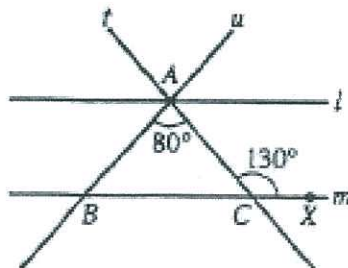
If side AC is congruent to side BC, angle CBA must be congruent to angle BAC.

Angle CDE is congruent to angle BAC because they are Alternate Interior Angles.

Triangles have a sum of 180 degrees.

21)

In the figure below, line l is parallel to line m . Transversals t and u intersect at point A on l and intersect m at points C and B , respectively. Point X is on m , the measure of $\angle ACX$ is 130° , and the measure of $\angle BAC$ is 80° . How many of the angles formed by rays of l , m , and u have measure 50° ?



Angle ACB must be 50 degrees because it is supplementary to angle ACX. What other angles are 50 degrees?

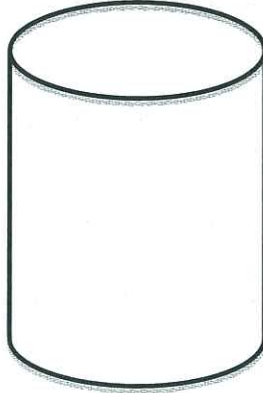
22)

The total surface area, including top and bottom, of a right circular cylinder is given by the expression $2\pi rh + 2\pi r^2$, where r is the radius and h is the height of the cylinder. What is the total surface area, in square inches, of a cylinder that is 8 inches high and has a diameter of 6 inches?

diameter = 6

radius = ____

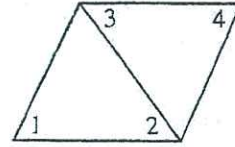
height = ____



23) (*angle 2 and angle 3 are alternate interior angles*)

In the parallelogram below, a diagonal is shown and $\angle 2$ measures 54° . What is the measure, in degrees, of $\angle 3$?

- A. 36°
- B. 42°
- C. 54°
- D. 63°
- E. 72°



Name: _____ TP: _____

Failure to write in complete sentences and show all work will result in LaSalle!**Rewrite the conditional statements in if-then form.**

1) The measure of a straight angle is 180° . HYPOTHESIS: <i>If an angle measures 180 degrees,</i> CONCLUSION: <i>Then it is a straight line.</i> IF-THEN FORM: <i>If an angle measures 180 degrees, then it is a straight line.</i>	2) Congruent segments are segments that are equal in measure. HYPOTHESIS: CONCLUSION: IF-THEN FORM:
3) Today is Monday if yesterday was Sunday. HYPOTHESIS: CONCLUSION: IF-THEN FORM:	4) A number is divisible by 4 if it is divisible by 8. HYPOTHESIS: CONCLUSION: IF-THEN FORM:

Write the converse, inverse, and contrapositive for each conditional statement that is given. Then decided whether each statement is *true* or *false*.

		True/False
6) Conditional Statement (if p then q)	If the weather is warm, then we will go swimming.	
Converse (if q then p)		
Inverse (if not p then not q)		
Contrapositive (if not q then not p)		

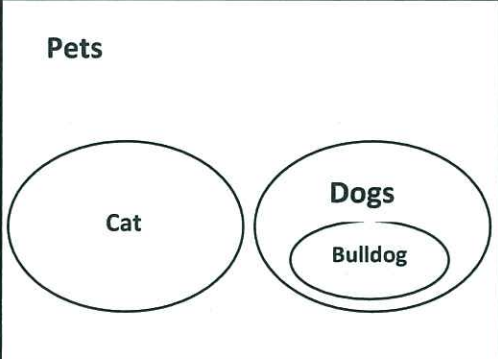
		True/False
7) Conditional Statement	If $x^2 = 25$, then $x = 5$ * x could also be -5: $(-5)^2$ also equals 25; therefore this statement is false.	F
Converse	<i>If $x = 5$, then $x^2 = 25$.</i>	T
Inverse	<i>If x^2 DOESN'T equal 25, then x DOESN'T equal 5.</i>	T
Contrapositive	<i>If x DOESN'T equal 5, then x^2 DOESN'T equal 25.</i> * x could also be -5: $(-5)^2 = 25$; therefore this statement is false	F

PUSH IT TO THE LIMIT.

		True/False
8) Conditional Statement	If $x = -6$, then $ x = 6$	
Converse		
Inverse		
Contrapositive		

		True/False
9) Conditional Statement	If points D, E, and F are collinear, then $DE + EF = DF$	
Converse		
Inverse		
Contrapositive		

Write 2-3 conditional statements in if-then form and determine whether your statements are true or false. Then write a converse, inverse, and contrapositive statements for each of your examples.

<p>10)</p> 	<p>a. IF-THEN:</p> <p>b. CONVERSE:</p> <p>c. INVERSE:</p> <p>d. CONTRAPOSITIVE:</p>	<p>a. T or F</p> <p>b. T or F</p> <p>c. T or F</p> <p>d. T or F</p>
<p>11) Simplify: 1) <i>Distribute the negative to the 2, $-4n$, and $-n$ to the 4th power.</i> 2) <i>Combine like terms!</i></p> <p><i>Exponents must be the same.</i> $(1 + 7n + 5n^4) - (2 - 4n - n^4)$</p>		

PUSH IT TO THE LIMIT.

Name: _____ TP: _____

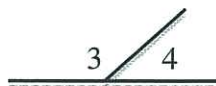
Failure to show work on all problems or use complete sentences will result in a LaSalle.

INDUCTIVE reasoning: uses specific examples (patterns) to arrive at a conclusion and **will NOT always be true**

DEDUCTIVE reasoning: uses facts and rules that apply to specific situations

What conjecture can you make from each problem below? Sketch a picture to help confirm your conjecture. Then state if you used inductive or deductive reasoning.

1. $\angle 3$ and $\angle 4$ are a linear pair.



2. $DE = EF$



Determine whether the following statements use inductive or deductive reasoning and state why.

3. All Snickers bars have nuts. I am allergic to nuts. Therefore I should not eat a Snickers bar.

4. I went to Lake Tahoe four times and every time it snowed. When I go next, it will be snowing.

5. An advertisement says "If you like to snowboard, then you'll love North Star at Tahoe." Shiraz likes to snowboard, but when he went to North Star he didn't like it very much. If you know that Shiraz saw the ad, explain how his reasoning was flawed.

*6. Explain why inductive reasoning is not the best method to prove something is true in geometry.

Determine whether the students used Inductive Reasoning or Deductive Reasoning to arrive at the conclusion. Explain your reasoning.

INDUCTIVE reasoning: uses specific examples (patterns) to arrive at a conclusion and **will NOT always be true**

DEDUCTIVE reasoning: uses facts and rules that apply to specific situations

7) Nicole knows that all students in Ms. Yarrington's 5th period have English homework tonight. Her friend Michael is in Ms. Yarrington's 5th period. Therefore, Michael has English homework tonight.

8) Isabel read one of the Twilight series books and it bored her. She concludes that all of the Twilight books are boring.

9) Grant notices that the Footlocker by his house and the Footlocker by his school are having sales. He concludes that all Footlockers are having a sale currently.

10) Sandra is convinced that all cartoons are for kids. She just heard from her friends about a new cartoon called "Phineas and Ferb" and she tells her friends, "That show is childish."

Use the Law of Syllogism to write a statement (C) that would follow if statements (A) and (B) were true.

Law of Syllogism: Combines the hypothesis of one statement with the conclusion of another.

Ex. If it snows today, then I will wear my gloves. If I wear my gloves, then my fingers will get itchy. If it snows today, then my fingers will get itchy.

INDUCTIVE: assumption **DEDUCTIVE:** fact

11) (A) If you eat too much turkey, then you get sick.
(B) If you get sick, then you will not be able to go to school.

(C)

12) (A) If an angle measure is more than 90° , then it is not acute.

(B) If an angle is not acute, then it is obtuse.

(C)

13) (A) Jim is taller than Christian.
(B) Christian is taller than Yvette.

(C)

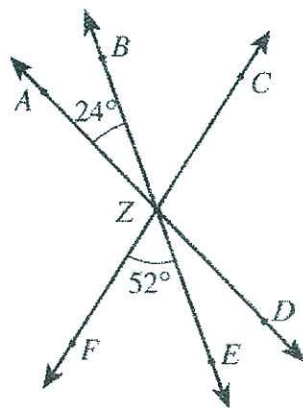
14) (A) If you pay attention, you will do well on your homework.

(B) If you pay attention, you will do well on your quiz.

(C)

15) **LABEL ALL ANGLE RELATIONSHIPS USED (vertical or supplementary)! AND MARK UP THE DIAGRAM BELOW!**

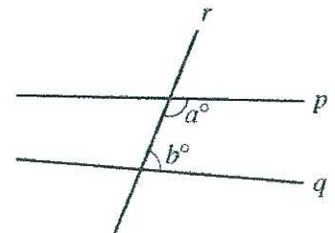
In the figure below, \overleftrightarrow{AD} , \overleftrightarrow{BE} , and \overleftrightarrow{CF} all intersect at point Z, with angle measures as marked. What is the measure of $\angle CZE$?



- F. 76°
- G. 104°
- H. 114°
- J. 118°
- K. 128°

16)

In the figure below, transversal r crosses both p and q , and a° and b° are measures of the indicated angles, both between 0° and 180° . Lines p and q will cross somewhere to the left of transversal r (that is, on the side opposite the indicated angles). Which of the following statements best expresses a true relationship between a and b for all possible positions of transversal r ?

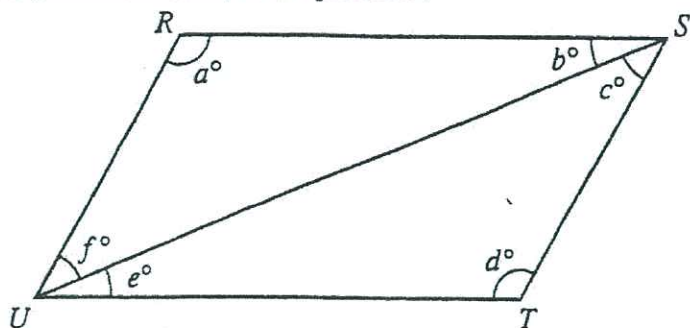


- F. $a < b$
- G. $a = b$
- H. $a + b < 180$
- J. $a + b = 180$
- K. $a + b > 180$

PUSH IT TO THE LIMIT.

17) List all angle relationships used (alternate interior or exterior, consecutive interior, or corresponding)

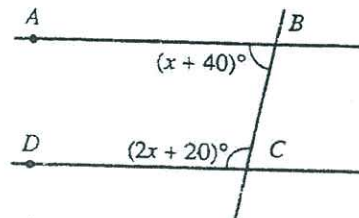
Which of the following conditions would force \overline{RS} and \overline{UT} , shown below, to be parallel?



- F. $b^\circ = f^\circ$
- G. $b^\circ = e^\circ$
- H. $c^\circ = f^\circ$
- J. $a^\circ + c^\circ = 180^\circ$
- K. $a^\circ + f^\circ = 180^\circ$

18) Use what you know about consecutive interior angles to determine the angle range!

In the figure below, the measure of $\angle ABC$ is $(x + 40)^\circ$ and the measure of $\angle BCD$ is $(2x + 20)^\circ$. What are all the values of x such that the measures of $\angle ABC$ and $\angle BCD$ must be between 0° and 180° and \overleftrightarrow{AB} is NOT parallel to \overleftrightarrow{CD} ?



- F. $x \neq 40$
- G. $-40 < x < 140$
- H. $-10 < x < 80$
- J. $-40 < x < 40$ or $40 < x < 140$
- K. $-10 < x < 40$ or $40 < x < 80$